Math 173 - Quiz 11

Name _____

May 4, 2017

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (5 points) The solid region inside the cylinder $x^2 + y^2 = 2$ is bounded below by the surface $z = 0$ and above by $z = x^2 + y^2 + 3$. The density of the solid at the point (x, y, z) is given by $\rho(x, y, z) = y + z^2 + 1$. Find the center of mass of the solid. Use your calculator or computer algebra system to evaluate all required integrals.

2. (5 points) Let T be the tetrahedron in the 1st octant whose vertices are $(0, 0, 0)$, $(1, 0, 0)$, $(0, 2, 0)$, and $(0, 0, 3)$. Find the average value of $f(x, y, z) = x + y^2 + z^3$ on T. Use your calculator or computer algebra system to evaluate all required integrals.